

ABSTRACT OF THE DISCLOSURE

A fuel cell with a gas diffusion media having a hydrophobic layer adjacent a flow field plate and a hydrophilic layer adjacent the membrane electrode assembly of the fuel cell. The two layers enable balanced humidification of reactant gas along with a basis for managing capillary water addition into the gas diffusion media. The combination of balanced moisture flux (via the hydrophobic layer) and the retention of water (via the hydrophilic layer) for humidifying reactant gas sustains hydration of the proton exchange membrane while preserving the catalyst at full activity.